

VARIABLE RATIO DRIVE SYSTEM

ABSTRACT OF THE DISCLOSURE

A drive system for a vehicle utilizes a series of drive motors and a single planetary gear box to provide driving input to a differential for an axle assembly. The differential drives a pair of axle shafts that drive a pair of laterally spaced wheels. The planetary gear box includes a sun gear, a plurality of planet gears in meshing engagement with the sun gear, a planet carrier that supports the planet gears, and a ring gear that is in meshing engagement with the planet gears. One drive motor drives the sun gear and another drive motor drives the ring gear. The planet carrier provides the output driving force from the planetary gear box to the differential. The motor that drives the sun gear provides for high output torque by taking advantage of a high gear ratio reduction and the motor that drives the ring gear provides for high output speed by taking advantage of a low gear ratio reduction. When both motors are simultaneously powered, a variable gear ratio is provided.